REMARKS

IINTRODUCTION

It is noted that Claims 6, 7 and 9 have been indicated to be allowable if rewritten in independent form. This indication of allowable subject matter is appreciated. To meet this requirement (in modified form), Applicant has elected to rewrite Claim 5 in independent form and to make claims 6 – 9 depend from claim 5 (or claims dependent thereon). In view of what are considered to be significant differences between the cited reference and the newly independent claim 5, as will be pointed out below, all of claims 6 –9 are submitted to be allowable.

In the Examiner's "Response to Arguments" stated at page 2 of the Final Rejection, the Examiner's general statements ignore and/or misinterpret significant elements of Applicant's claims. These general statements regarding image size, bandwidth, resolution and the use , in general, of motion compensation processing in PIP displays are submitted to be not pertinent to the claimed invention set forth herein.

All claims of this application relate to methods and apparatus for processing data relating to one image of a reduced size PIP display. In the rejection, the Examiner has relied upon various elements of the cited reference which are employed to produce a main, full size image and two separate and different PIP images within the main display area. These multiple image displays are very different from and are not what is recited in the claims of this application. The Examiner's attention will be directed below to specific language in the claims which makes these distinctions clear.

THE REJECTION

Claims 1-5, 8 and 10-24 have been rejected under 35 U.S.C. 103(a) as unpatentable (obvious) over U.S. Patent No. 5,614,957 – Boyce et al.

In the rejection, each of the independent claims, apparatus claim 1, as well as method claims 11 and 18, have been rejected on the basis of Figure 4 of Boyce and the description thereof in columns 18 and 19 of the patent.

It is noted that certain aspects of Boyce are concerned with decoding a high-definition (HD) video signal and with producing one or more picture-in-picture reduced resolution images, typically along with a full screen, higher resolution main image. Specifically, Boyce states, at col. 18, lines 25 – 31 (referring to Fig. 4):

> " The primary decoder 401 is responsible for decoding the main picture of a picture-in-picture image while the first and second decoders (402, 403) are responsible for generating separate images which will be displayed in a small area of the main picture. A separate reduced resolution decoder 402 or 403 is used for each additional image that is to be displayed in addition to the main picture." (emphasis added).

At col. 18, lines 32 – 37, Boyce goes on to say:

> " The output of the primary decoder 401 and the reduced resolution decoders 402 , 403 is (sic. "are") coupled to the input of a picture-in-picture video processing circuit which operates to combine the main picture with the reduced resolution pictures output by the reduced resolution decoders 402, 403 prior to the resulting combined picture being displayed." (emphasis added).

In the rejection of the claims, the Examiner identifies the "resolution" associated with Boyce's decoders 401, 402 and 403 for three

different images as "resolution 1", "resolution 2" and "resolution 3", respectively. The Examiner states, in describing the resolution of these three different image decoders, "Boyce does not specifically teach resolution 3 being greater than resolution 2" (as is required in the combinations of apparatus/methods for processing a single image data set in all of the rejected claims, as will be pointed out below). Boyce states, at col. 19, lines 25 – 30:

> " the illustrated PIP decoder arrangement is in no way limited to a specific degree of resolution with respect to the primary decoder 401 and only requires that the secondary decoder(s) 402, 403 be implemented as reduced resolution decoders as compared to the resolution supported by the primary decoder." (emphasis added).

Finally, the Examiner, mentions, without providing any specific information about resolution, that Boyce, at "Column 19, Lines 6 – 12 disclose a motion compensation circuit used in conjunction with the PIP decoder of Figure 4." (Final Rejection, page 4, lines 2 - 3).

It is quite clear from what Boyce says that each of his three decoders 401, 402, 403 processes a different image signal and produces a different image (i.e., a different channel). Furthermore, there is NO particular relationship between resolutions 2 and 3 (the separate PIP resolutions) of Boyce since each of the decoders 402 and 403 is intended to produce its own INDEPENDENT PIP image unrelated to the others. The resolutions "2" and "3" can be, and most likely are, in fact, equal resolutions according to what Boyce states.

Finally, Boyce does not disclose or suggest any special relationship between two different resolutions associated, respectively, with a motion-compensation-unit processing means and a "means responsive to ---a subset of frequency domain coefficients", both of which are associated with processing data signals from a SINGLE image data source.

In the Final Rejection, there is no recognition of the fact that, unlike the three independent decoders for three independent images of the cited reference, in all of the rejected claims, there is only recited "an image" and "said image" (the same, single image throughout each claim). Nevertheless, the Examiner has concluded that Applicant's different, specifically recited combinations of apparatus and method elements, with specifically recited INTERDEPENDENT relationship between two reduced resolution image signals (e.g., "said image at an intermediate third resolution lower than said first resolution and higher than said reduced second resolution" – claim 1), relating to one image are unpatentable over Boyce because "it would have been obvious to one of ordinary skill in the art to utilize decoders of varying (?) resolution to achieve greater PIP versatility" (Final Rejection, page 4, end of first paragraph).

THE CLAIMED INVENTION

Applicant's apparatus claims (claims 1 – 10) relate to a combination of elements "to provide an image at a reduced second resolution for display" (claim 1, line 3, emphasis added). According to claim 1, a "first means ----for deriving said image of said reduced second resolution for display" (emphasis added) includes:

(1) an "enhanced motion-compensation-unit(MCU) processing means, and"

(2) "second means for operating said enhanced MCU processing means with blocks of pixel values representing said image at an intermediate third resolution, etc" (emphasis added).

The claim goes on to specify that the third resolution is lower than the resolution of the first (e.g. "image at a first resolution") and higher than the resolution of the second image (e.g. a PIP image which is the one to be derived for display). Thus, the MCU which is INCLUDED in the recited "first means ---for deriving said image of--- second resolution" is OPERATED with blocks of pixel values representing the image at "an intermediate third resolution" lower than the first and higher than the second. This apparatus for operating on data in the MCU processor at a different resolution than is associated with other data for the same image is simply not disclosed or suggested by the reference.

Clearly, Boyce operates each of his main and PIP decoders on their own (independently) and never discloses or suggests operating a decoder for providing an image at a "second resolution" and a motion compensated unit associated with image-representative pixel values "at a third resolution" as is claimed. Boyce never discloses anything about a "third resolution" in the context of main image and the same PIP image data. It is respectfully submitted that there is no basis for holding Applicant's sophisticated claimed arrangement to be obvious in view of Boyce.

Claim 5, which has been rewritten in independent form including all of the language of Claim 1, defines inventive subject matter over Boyce for the same reasons as set forth above.

Similarly, independent method claim 11 recites a method "to provide an image of a reduced second resolution" including "using data at an intermediate third resolution, lower than said first resolution but higher than said –second resolution, to supplement data from said –second resolution in forming predictions for motion compensation" . All of this language relates to a single image, which steps are neither disclosed nor suggested by Boyce. Here again, the sophisticated combination of using data at second and third resolutions in the context of providing motion compensation for an image of second resolution is far from anything disclosed or suggested by Boyce and is submitted to be unobvious.

Independent method claim 18 recites a method relatd to processing data for a single image which comprises "generating motion compensated pixel block data at said third resolution from ----- said second resolution supplemented by said ---third resolution data" which, once again, is neither disclosed nor suggested by Boyce and is clearly not obvious in view of Boyce.

The Examiner's conclusion that "It would have been obvious to one of ordinary skill in the art to utilize decoders of varying resolution to achieve greater PIP versatility", even if true, is respectfully submitted to be irrelevant in the context of the present invention. The gap between this statement and the particular claimed method steps and apparatus configurations relating to motion

compensation in displayed images as pointed out above is submitted to demonstrate the unobviousness and patentability of all of the independent claims, and hence of all of the claims, of this application.

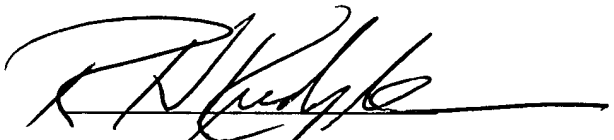
It is respectfully submitted that the cited reference, either alone or in combination with what may be shown to be known by a person of ordinary skill, does not satisfy the requirements of teaching or suggesting modifying the reference in any manner to arrive at the claimed combinations. Furthermore, it is respectfully submitted that a prima facie case of obviousness is not made out on the basis of the Boyce reference since there is nothing which would suggest or motivate anyone to modify that reference in a way which would be consistent with the present claims. Finally, there would be no reasonable expectation of success for any purpose by modifying that reference. It is noted that the Examiner has acknowledged that the reference does not disclose all of the elements of Applicant's claims.

In view of the significant differences between each of the independent claims 1, 5, 11 and 18 and the cited reference, and the modification of claims 5 – 9, all claims are submitted to be patentable over such reference. It is submitted that all of the claims are fully supported by the disclosure as originally filed.

Reconsideration of the rejection of claims 1 – 24, entry of this amendment on the grounds it has placed all claims in condition for allowance and allowance thereof are respectfully requested in view of the foregoing

amendments, the comments and the requirements of the law. A favorable action is requested.

Respectfully submitted,



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July 21, 2003
Date

Linda Tindall